

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 1. (Currently Amended) A method ~~for segmenting a data object associated~~
2 ~~for facilitating transfer of a data object retained by a first computer-~~
3 ~~readable data storage device in communication with a first computing~~
4 ~~system for facilitating transfer of said segmented data object from said first~~
5 ~~computing system to a second computing system and thence to a second~~
6 ~~computer-readable data storage device, comprising the step of~~
7 ~~segmenting said data object, said segmenting said data object~~ comprising
8 the steps of:

9 requesting a range of addresses within ~~a storage device of the first~~
10 ~~computing system~~ said first computer-readable data storage device
11 containing said data object;

12 determining a number of computer-readable storage devices attached
13 ~~to~~ in communication with said first computing system available to
14 retain a plurality of segments of said data object;

15 determining a maximum digital data transfer load for the computer-
16 readable storage devices ~~attached to~~ in communication with said
17 first computing system;

18 assigning a minimum segment size which is the smallest amount of
19 digital data to be contained within one segment of the data object;

20 calculating a first segment size as a first function of a number of the
21 computer-readable storage devices, the current digital data transfer
22 load, the maximum digital data transfer load, and the minimum
23 segment size;

24 assigning a last segment size as the minimum segment size;

25 calculating all remaining segment sizes as a second function of the
26 number of the computer-readable storage devices, the current
27 digital data transfer load, the maximum digital data transfer load,
28 and the minimum segment size; and

29 partitioning said data object into segments whereby the first segment
30 of the data object is of the first segment size, the last segment of
31 the data object is of the last segment size, and all the remaining
32 segments of the data object is of the remaining segment sizes.

- 1 2. (Currently Amended) The method of claim 1 wherein said segmenting
2 further ~~comprising~~ comprises the steps of:

3 assigning one of the number of computer-readable storage devices to
4 retain each segment of the data object;

5 assigning an address within the computer-readable storage devices to
6 identify the location of an assigned segment;

7 assigning an object name to each segment of the data object; and

8 transferring each segment to its assigned computer-readable storage
9 device.

1 3. (Currently Amended) The method of claim 1 wherein the first function to
2 determine the first segment size is:

$$3 \quad \text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of ~~the video data file~~ said data
9 object,

10 **V** is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right)$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the data object,

M_i is the maximum digital data transfer
load, and

C_i is the current digital data transfer
load.

4. (Currently Amended) The method of claim 1 wherein the second function
to determine the remaining segment sizes is:

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

where

Segn is the a segment size for one segment of the
remaining segments,

max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed during the fragmenting of the ~~video data file~~ said data object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right)$$

where

N_d is the number of computer-readable storage devices available to retain the segments of the data object,

M_i is the maximum digital data transfer load, and

C_i is the current digital data transfer load.

5. (Currently Amended) The method of claim 1 wherein said segmenting further ~~comprising~~ comprises the step of:

3 determining a file interactivity factor describing a number of jumps by
4 the second computing system within the data object during
5 processing by said second computing system.

1 6. (Original) The method of claim 5 wherein the first function is further
2 dependent upon the file interactivity factor.

1 7. (Currently Amended) The method of claim 6 wherein the first function to
2 determine the first segment size is:

3 **Seg1 = min(SegSize_{min}, V/f)**

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of ~~the video data file~~ said data
9 object,

10 **V** is a total size of the data object, and

11 **f** is determined by the formula:

12
$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + I$$

13

where

14

N_d is the number of computer-readable

15

storage devices available to retain the

16

segments of the data object,

17

M_i is the maximum digital data transfer

18

load,

19

C_i is the current digital data transfer

20

load, and

21

I is the file interactivity factor.

1 8. (Original) The method of claim 5 wherein the second function is further
2 dependent upon the file interactivity factor.

1 9. (Currently Amended) The method of claim 8 wherein the second function
2 to determine the remaining segment sizes is:

3
$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4

where

5

Segn is the a segment size for one segment of the

6

remaining segments,

7

\max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the ~~video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_l}{M_l - C_l} \right) + I$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the data object,

M_l is the maximum digital data transfer
load,

C_l is the current digital data transfer
load, and

I is the file interactivity factor.

10. (Currently Amended) The method of claim 1 wherein said segmenting
further ~~comprising~~ comprises the step of:

determining a file usage factor describing a number of requests for
said data object for a period of time.

11. (Original) The method of claim 9 wherein the first function is further
dependent upon the file usage factor.

12. (Currently Amended) The method of claim 10 wherein the first function to
determine the first segment size is:

$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

where

Seg1 is the first segment size,

min is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the video data file said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H$$

13 where

14 N_d is the number of computer-readable
15 storage devices available to retain the
16 segments of the data object,

17 M_l is the maximum digital data transfer
18 load,

19 C_l is the current digital data transfer
20 load, and

21 H is the file usage factor.

1 13. (Original) The method of claim 9 wherein the second function is further
2 dependent upon the file usage factor.

1 14. (Currently Amended) The method of claim 13 wherein the second function
2 to determine the remaining segment sizes is:

3
$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4 where

5 Segn is the a segment size for one segment of the
6 remaining segments,

7 \max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed during the fragmenting of the ~~video data file~~ said data object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_l}{M_l - C_l} \right) + H$$

where

N_d is the number of computer-readable storage devices available to retain the segments of the data object,

M_l is the maximum digital data transfer load,

C_l is the current digital data transfer load, and

H is the file usage factor.

15. (Currently Amended) The method of claim 1 wherein said segmenting further ~~comprising~~ comprises the steps of:

determining a file usage factor describing a number of requests for
said data object for a period of time; and

determining a file interactivity factor describing a number of jumps by
the second computing system within the data object during
processing by said second computing system.

16. (Original) The method of claim 15 wherein the first function is further
dependent upon the file usage factor and the file interactivity factor.

17. (Currently Amended) The method of claim 16 wherein the first function to
determine the first segment size is:

$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

where

Seg1 is the first segment size,

min is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of ~~the video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

12

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H + I$$

13

where

14

N_d is the number of computer-readable

15

storage devices available to retain the

16

segments of the data object,

17

M_i is the maximum digital data transfer

18

load,

19

C_i is the current digital data transfer

20

load,

21

H is the file usage factor, and

22

I is the file interactivity factor.

1 18. (Original) The method of claim 15 wherein the second function is further

2 dependent upon the file usage factor and the file interactivity factor.

1 19. (Currently Amended) The method of claim 18 wherein the second function

2 to determine the remaining segment sizes is:

3

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4

where

Segn is the a segment size for one segment of the
remaining segments,

max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of ~~the video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_l}{M_l - C_l} \right) + H + I$$

where

N_d is the number of storage devices
available to retain the segments of the
data object,

M_l is the maximum digital data transfer
load,

C_l is the current digital data transfer
load,

22 H is the file usage factor, and

23 I is the file interactivity factor.

1 20. (Original) The method of claim 1 wherein the data object is a video data
2 file to be transferred isochronously to the second computing system.

1 21. (Currently Amended) A digital data service system in communication with
2 a plurality of computing systems to ~~provide transfer~~ at least one data
3 object of a plurality of data objects to at least one of the plurality of
4 computing systems, comprising:

5 a plurality of data object storage devices in communication with each
6 other and with any of the plurality of computing systems for
7 retaining each of said plurality of data objects; and

8 a segmentation apparatus in communication with the plurality of data
9 object storage devices to fragment any of the data objects into a
10 plurality of segments to allow transfer to and processing by at least
11 one of the computing systems of said segments, wherein the
12 segmentation apparatus performs said fragmenting by the steps of:

13 requesting a range of addresses within ~~a storage device~~ one of said
14 data object storage devices containing said data object,

determining a number of said data object storage devices available

to retain a plurality of segments of said data object,

determining a maximum digital data transfer load for the data object

storage devices,

assigning a minimum segment size which is the smallest amount of

digital data to be contained within one segment of the data

object,

calculating a first segment size as a first function of a number of the

data object storage devices, the current digital data transfer

load, the maximum digital data transfer load, and the minimum

segment size,

assigning a last segment size as the minimum segment size,

calculating all remaining segment sizes as a second function of the

number of the data object storage devices, the current digital

data transfer load, the maximum digital data transfer load, and

the minimum segment size, and

partitioning said data object into segments whereby the first

segment of the data object is of the first segment size, the last

segment of the data object is of the last segment size, and all

34 the remaining segments of the data object is of the remaining
35 segment sizes;

1 22. (Cancelled)

1 23. (Currently Amended) The system of claim 21 wherein the segmentation
2 apparatus the further performs the steps of:

3 assigning one of the number of data object storage devices to retain
4 each segment of the data object;

5 assigning an address within the data object storage devices to identify
6 the location of an assigned segment;

7 assigning an object name to each segment of the data object; and

8 transferring each segment to its assigned data object storage device.

1 24. (Currently Amended) The system of claim 21 wherein the first function to
2 determine the first segment size is:

3
$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of ~~the video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right)$$

where

N_d is the number of storage devices
available to retain the segments of the
data object,

M_i is the maximum digital data transfer
load, and

C_i is the current digital data transfer
load.

25. (Currently Amended) The system of claim 21 wherein the second function
to determine the remaining segment sizes is:

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Segn** is the a segment size for one segment of the
6 remaining segments,

7 **max** is the maximum function of two variables,

8 **SegSize_{min}** is the minimum segment size allowed
9 during the fragmenting of the video data file said data
10 object,

11 **V** is a total size of the data object, and

12 **f** is determined by the formula:

13
$$f = N_d + \left(\frac{M_i}{M_i} - C_i \right)$$

14 where

15 **N_d** is the number of storage devices
16 available to retain the segments of the
17 data object,

18 **M_i** is the maximum digital data transfer
19 load, and

20 C_i is the current digital data transfer
21 load.

1 26. (Currently Amended) The system of claim 21 ~~further comprising wherein~~
2 the segmentation apparatus the further performs the step of:

3 determining a file interactivity factor describing a number of jumps by
4 the computing system within the data object during processing by
5 said second computing system.

1 27. (Original) The system of claim 26 wherein the first function is further
2 dependent upon the file interactivity factor.

1 28. (Currently Amended) The system of claim 27 wherein the first function to
2 determine the first segment size is:

3
$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of ~~the video data file~~ said data
9 object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + I$$

where

N_d is the number of storage devices
available to retain the segments of the
data object,

M_i is the maximum digital data transfer
load,

C_i is the current digital data transfer
load, and

I is the file interactivity factor.

29. (Previously Presented) The system of claim 21 wherein the second
function is further dependent upon the file interactivity factor.

30. (Currently Amended) The system of claim 29 wherein the second function
to determine the remaining segment sizes is:

3

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4

where

5

Segn is the a segment size for one segment of the

6

remaining segments,

7

max is the maximum function of two variables,

8

SegSize_{min} is the minimum segment size allowed

9

during the fragmenting of the video data file said data

10

object,

11

V is a total size of the data object, and

12

f is determined by the formula:

13

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + I$$

14

where

15

N_d is the number of storage devices

16

available to retain the segments of the

17

data object,

18

M_i is the maximum digital data transfer

19

load,

20 C_i is the current digital data transfer
21 load, and
22 I is the file interactivity factor.

1 31. (Currently Amended) The system of claim 21 ~~further comprising wherein~~
2 the segmentation apparatus the further performs the step of:

3 determining a file usage factor describing a number of requests for
4 said data object for a period of time.

1 32. (Original) The system of claim 31 wherein the first function is further
2 dependent upon the file usage factor.

1 33. (Currently Amended) The system of claim 32 wherein the first function to
2 determine the first segment size is:

3
$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of ~~the video data file~~ said data
9 object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H$$

where

N_d is the number of storage devices
available to retain the segments of the
data object,

M_i is the maximum digital data transfer
load,

C_i is the current digital data transfer
load, and

H is the file usage factor.

34. (Original) The system of claim 31 wherein the second function is further
dependent upon the file usage factor.

35. (Currently Amended) The system of claim 34 wherein the second function
to determine the remaining segment sizes is:

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

where

Segn is the a segment size for one segment of the
remaining segments,

max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of ~~the video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H$$

where

N_d is the number of storage devices
available to retain the segments of the
data object,

M_i is the maximum digital data transfer
load,

20 C_i is the current digital data transfer
21 load, and
22 H is the file usage factor.

1 36. (Currently Amended) The system of claim 21 ~~further comprising wherein~~
2 the segmentation apparatus the further performs the steps of:

3 determining a file usage factor describing a number of requests for
4 said data object for a period of time; and

5 determining a file interactivity factor describing a number of jumps by
6 the computing system within the data object during processing by
7 said second computing system.

1 37. (Original) The system of claim 36 wherein the first function is further
2 dependent upon the file usage factor and the file interactivity factor.

1 38. (Currently Amended) The system of claim 37 wherein the first function to
2 determine the first segment size is:

3
$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 Seg1 is the first segment size,

6 \min is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of ~~the video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_l}{M_l - C_l} \right) + H + I$$

where

N_d is the number of storage devices
available to retain the segments of the
data object,

M_l is the maximum digital data transfer
load,

C_l is the current digital data transfer
load,

H is the file usage factor, and

I is the file interactivity factor.

39. (Original) The system of claim 37 wherein the second function is further dependent upon the file usage factor and the file interactivity factor.

40. (Currently Amended) The system of claim 39 wherein the second function to determine the remaining segment sizes is:

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

where

Segn is the a segment size for one segment of the remaining segments,

max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed during the fragmenting of the video data file said data object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H + I$$

where

15 N_d is the number of storage devices
16 available to retain the segments of the
17 data object,

18 M_l is the maximum digital data transfer
19 load,

20 C_l is the current digital data transfer
21 load,

22 H is the file usage factor, and

23 I is the file interactivity factor.

1 41. (Original) The system of claim 21 wherein the data object is a video data
2 file to be transferred isochronously to the computing system.

1 42. (Currently Amended) An apparatus ~~to segment a data object to facilitate~~
2 ~~transfer of said data object from~~ for facilitating transfer of a data object
3 retained by a first computer-readable data storage device in
4 communication with a first computing system from said first computing
5 system to a second computing system and thence to a second computer-
6 readable data storage device, comprising means for segmenting said data
7 object, said means for segmenting said data object comprising:

8 means for requesting a range of addresses within a ~~storage device of~~
9 said first computer-readable data storage device in communication
10 with the first computing system containing said data object;

11 means for determining a number of computer-readable storage
12 ~~devices attached to~~ in communication with said first computing
13 system available to retain a plurality of segments of said data
14 object;

15 means for determining a maximum digital data transfer load for the
16 computer-readable storage devices ~~attached to~~ in communication
17 with said first computing system;

18 means for assigning a minimum segment size which is the smallest
19 amount of digital data to be contained within one segment of the
20 data object;

21 means for calculating a first segment size as a first function of a
22 number of the computer-readable storage devices, the current
23 digital data transfer load, the maximum digital data transfer load,
24 and the minimum segment size;

25 means for assigning a last segment size as the minimum segment
26 size;

27 means for calculating all remaining segment sizes as a second
28 function of the number of the computer-readable storage devices,
29 the current digital data transfer load, the maximum digital data
30 transfer load, and the minimum segment size; and

31 means for partitioning said data object into segments whereby the first
32 segment of the data object is of the first segment size, the last
33 segment of the data object is of the last segment size, and all the
34 remaining segments of the data object is of the remaining segment
35 sizes.

1 43. (Currently Amended) The apparatus of claim 42 ~~further comprising~~
2 wherein said means for segmenting said data object further comprises:

3 means for assigning one of the number of computer-readable storage
4 devices to retain each segment of the data object;

5 means for assigning an address within the computer-readable storage
6 devices to identify the location of an assigned segment;

7 means for assigning an object name to each segment of the data
8 object; and

9 means for transferring each segment to its assigned computer-
10 readable storage device.

44. (Currently Amended) The apparatus of claim 42 wherein the first function
to determine the first segment size is:

$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

where

Seg1 is the first segment size,

min is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the ~~video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right)$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the data object,

17 M_i is the maximum digital data transfer
18 load, and
19 C_i is the current digital data transfer
20 load.

1 45. (Currently Amended) The apparatus of claim 42 wherein the second
2 function to determine the remaining segment sizes is:

3
$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4 where

5 Segn is the a segment size for one segment of the
6 remaining segments,

7 \max is the maximum function of two variables,

8 SegSize_{\min} is the minimum segment size allowed
9 during the fragmenting of the video data file said data
10 object,

11 V is a total size of the data object, and

12 f is determined by the formula:

13
$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right)$$

14

where

15

N_d is the number of computer-readable

16

storage devices available to retain the

17

segments of the data object,

18

M_l is the maximum digital data transfer

19

load, and

20

C_l is the current digital data transfer

21

load.

1

46. (Currently Amended) The apparatus of claim 42 ~~further comprising~~

2

wherein said means for segmenting said data object further comprises:

3

means for determining a file interactivity factor describing a number of

4

jumps by the second computing system within the data object

5

during processing by said second computing system.

1

47. (Original) The apparatus of claim 46 wherein the first function is further

2

dependent upon the file interactivity factor.

1

48. (Currently Amended) The apparatus of claim 47 wherein the first function

2

to determine the first segment size is:

3

$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of ~~the video data file~~ said data
9 object,

10 **V** is a total size of the data object, and

11 **f** is determined by the formula:

12
$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + 1$$

13 where

14 **N_d** is the number of computer-readable
15 storage devices available to retain the
16 segments of the data object,

17 **M_i** is the maximum digital data transfer
18 load,

19 **C_i** is the current digital data transfer
20 load, and

21

I is the file interactivity factor.

1

49. (Original) The apparatus of claim 46 wherein the second function is further dependent upon the file interactivity factor.

2

1

50. (Currently Amended) The apparatus of claim 49 wherein the second function to determine the remaining segment sizes is:

2

3

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4

where

5

Segn is the a segment size for one segment of the remaining segments,

6

7

max is the maximum function of two variables,

8

SegSize_{min} is the minimum segment size allowed

9

during the fragmenting of the video data file said data

10

object,

11

V is a total size of the data object, and

12

f is determined by the formula:

13

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + I$$

14

where

15

N_d is the number of computer-readable

16

storage devices available to retain the

17

segments of the data object,

18

M_l is the maximum digital data transfer

19

load,

20

C_l is the current digital data transfer

21

load, and

22

I is the file interactivity factor.

1 51.

(Currently Amended) The apparatus of claim 42 ~~further comprising~~

2

wherein said means for segmenting said data object further comprises:

3

means for determining a file usage factor describing a number of

4

requests for said data object for a period of time.

1 52.

(Original) The apparatus of claim 51 wherein the first function is further

2

dependent upon the file usage factor.

1 53.

(Currently Amended) The apparatus of claim 52 wherein the first function

2

to determine the first segment size is:

3

$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

where

Seg1 is the first segment size,

min is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of ~~the video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the data object,

M_i is the maximum digital data transfer
load,

C_i is the current digital data transfer
load, and

21 **H** is the file usage factor.

1 54. (Original) The apparatus of claim 51 wherein the second function is further
2 dependent upon the file usage factor.

1 55. (Currently Amended) The apparatus of claim 54 wherein the second
2 function to determine the remaining segment sizes is:

3
$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Segn** is the a segment size for one segment of the
6 remaining segments,

7 **max** is the maximum function of two variables,

8 **SegSize_{min}** is the minimum segment size allowed
9 during the fragmenting of ~~the video data file~~ said data
10 object,

11 **V** is a total size of the data object, and

12 **f** is determined by the formula:

13
$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the data object,

M_l is the maximum digital data transfer
load,

C_l is the current digital data transfer
load, and

H is the file usage factor.

56. (Currently Amended) The apparatus of claim 42 ~~further comprising the~~
~~steps of~~ wherein said means for segmenting said data object further
comprises:

means for determining a file usage factor describing a number of
requests for said data object for a period of time; and

means for determining a file interactivity factor describing a number of
jumps by the second computing system within the data object
during processing by said second computing system.

57. (Original) The apparatus of claim 56 wherein the first function is further
dependent upon the file usage factor and the file interactivity factor.

58. (Currently Amended) The apparatus of claim 57 wherein the first function
to determine the first segment size is:

$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

where

Seg1 is the first segment size,

min is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of ~~the video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H + I$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the data object,

17 M_l is the maximum digital data transfer
18 load,

19 C_l is the current digital data transfer
20 load,

21 H is the file usage factor, and

22 I is the file interactivity factor.

1 59. (Original) The apparatus of claim 56 wherein the second function is further
2 dependent upon the file usage factor and the file interactivity factor.

1 60. (Currently Amended) The apparatus of claim 57 wherein the second
2 function to determine the remaining segment sizes is:

3
$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4 where

5 Segn is the a segment size for one segment of the
6 remaining segments,

7 \max is the maximum function of two variables,

8 SegSize_{\min} is the minimum segment size allowed
9 during the fragmenting of the ~~video data file~~ said data
10 object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H + I$$

where

N_d is the number of computer-readable storage devices available to retain the segments of the data object,

M_i is the maximum digital data transfer load,

C_i is the current digital data transfer load,

H is the file usage factor, and

I is the file interactivity factor.

61. (Original) The apparatus of claim 42 wherein the data object is a video data file to be transferred isochronously to the second computing system.

62. (Currently Amended) A computer-readable medium for retaining a computer program code which, when executed on a computing system

3 performs a computer program process for ~~segmenting a data object~~
4 ~~associated facilitating transfer of a data object retained by a first A method~~
5 facilitating transfer of a data object retained by a first computer-readable
6 data storage device in communication with a first computing system to
7 ~~facilitate transfer of said segmented data object from said first computing~~
8 system to a second computing system and thence to a second computer-
9 readable data storage device, whereby said computer program process
10 executes the ~~steps of~~ step of segmenting said data object, said
11 segmenting said data object comprising the steps of:

12 requesting a range of addresses within a computer-readable storage
13 device ~~of the~~ in communication with said first computing system
14 containing said data object;

15 determining a number of computer-readable storage devices attached
16 ~~to~~ in communication with said first computing system available to
17 retain a plurality of segments of said data object;

18 determining a maximum digital data transfer load for the computer-
19 readable storage devices ~~attached to~~ in communication with said
20 first computing system;

21 assigning a minimum segment size which is the smallest amount of
22 digital data to be contained within one segment of the data object;

23 calculating a first segment size as a first function of a number of the
24 computer-readable storage devices, the current digital data transfer
25 load, the maximum digital data transfer load, and the minimum
26 segment size;

27 assigning a last segment size as the minimum segment size;

28 calculating all remaining segment sizes as a second function of the
29 number of the computer-readable storage devices, the current
30 digital data transfer load, the maximum digital data transfer load,
31 and the minimum segment size; and

32 partitioning said data object into segments whereby the first segment
33 of the data object is of the first segment size, the last segment of
34 the data object is of the last segment size, and all the remaining
35 segments of the data object is of the remaining segment sizes.

1 63. (Currently Amended) The medium of claim 62 ~~further executing wherein~~
2 performing step of segmenting said data object further comprises the
3 steps of:

4 means for assigning one of the number of computer-readable storage
5 devices to retain each segment of the data object;

6 means for assigning an address within the computer-readable storage
7 devices to identify the location of an assigned segment;

8 ~~means for assigning an object name to each segment of the data~~
9 object; and

10 ~~means for transferring each segment to its assigned computer-~~
11 readable storage device.

1 64. (Currently Amended) The medium of claim 62 wherein the first function to
2 determine the first segment size is:

3 **Seg1 = min(SegSize_{min}, V/f)**

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of ~~the video data file~~ said data
9 object,

10 **V** is a total size of the data object, and

11 **f** is determined by the formula:

12
$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right)$$

13 where

14 N_d is the number of computer-readable
15 storage devices available to retain the
16 segments of the data object,

17 M_l is the maximum digital data transfer
18 load, and

19 C_l is the current digital data transfer
20 load.

1 65. (Currently Amended) The medium of claim 62 wherein the second function
2 to determine the remaining segment sizes is:

3
$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4 where

5 Segn is the a segment size for one segment of the
6 remaining segments,

7 \max is the maximum function of two variables,

8 SegSize_{\min} is the minimum segment size allowed
9 during the fragmenting of ~~the video data file~~ said data
10 object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right)$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the data object,

M_i is the maximum digital data transfer
load, and

C_i is the current digital data transfer
load.

66. (Currently Amended) The medium of claim 62 ~~further executing wherein~~
performing step of segmenting said data object further comprises the step
of:

determining a file interactivity factor describing a number of jumps by
the second computing system within the data object during
processing by said second computing system.

1 67. (Original) The medium of claim 66 wherein the first function is further
2 dependent upon the file interactivity factor.

1 68. (Currently Amended) The medium of claim 67 wherein the first function to
2 determine the first segment size is:

3
$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of ~~the video data file~~ said data
9 object,

10 **V** is a total size of the data object, and

11 **f** is determined by the formula:

12
$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + I$$

13 where

14 N_d is the number of computer-readable
15 storage devices available to retain the
16 segments of the data object,

17 M_l is the maximum digital data transfer
18 load,

19 C_l is the current digital data transfer
20 load, and

21 I is the file interactivity factor.

1 69. (Original) The medium of claim 66 wherein the second function is further
2 dependent upon the file interactivity factor.

1 70. (Currently Amended) The medium of claim 69 wherein the second function
2 to determine the remaining segment sizes is:

3
$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4 where

5 Segn is the a segment size for one segment of the
6 remaining segments,

7 \max is the maximum function of two variables,

8 **SegSize_{min}** is the minimum segment size allowed
9 during the fragmenting of ~~the video data file~~ said data
10 object,

11 **V** is a total size of the data object, and

12 **f** is determined by the formula:

13
$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + I$$

14 where

15 **N_d** is the number of computer-readable
16 storage devices available to retain the
17 segments of the data object,

18 **M_i** is the maximum digital data transfer
19 load,

20 **C_i** is the current digital data transfer
21 load, and

22 **I** is the file interactivity factor.

1 71. (Currently Amended) The medium of claim 62 ~~further executing wherein~~
2 performing step of segmenting said data object further comprises the step
3 of:

4 determining a file usage factor describing a number of requests for
5 said data object for a period of time.

1 72. (Currently Amended) The medium of claim 71 wherein the first function is
2 further dependent upon the file usage factor.

1 73. (Currently Amended) The medium of claim 72 wherein the first function to
2 determine the first segment size is:

3 **$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$**

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of ~~the video data file~~ said data
9 object,

10 **V** is a total size of the data object, and

11 **f** is determined by the formula:

12 **$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H$**

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the data object,

M_l is the maximum digital data transfer
load,

C_l is the current digital data transfer
load, and

H is the file usage factor.

74. (Original) The medium of claim 71 wherein the second function is further
dependent upon the file usage factor.

75. (Currently Amended) The medium of claim 74 wherein the second function
to determine the remaining segment sizes is:

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

where

Segn is the a segment size for one segment of the
remaining segments,

\max is the maximum function of two variables,

8 **SegSize_{min}** is the minimum segment size allowed
9 during the fragmenting of ~~the video data file~~ said data
10 object,

11 **V** is a total size of the data object, and

12 **f** is determined by the formula:

13
$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H$$

14 where

15 **N_d** is the number of computer-readable
16 storage devices available to retain the
17 segments of the data object,

18 **M_i** is the maximum digital data transfer
19 load,

20 **C_i** is the current digital data transfer
21 load, and

22 **H** is the file usage factor.

1 76. (Currently Amended) The medium of claim 62 ~~further comprising~~ wherein
2 performing step of segmenting said data object further comprises the
3 steps of:

determining a file usage factor describing a number of requests for
said data object for a period of time; and

determining a file interactivity factor describing a number of jumps by
the second computing system within the data object during
processing by said second computing system.

77. (Original) The medium of claim 76 wherein the first function is further
dependent upon the file usage factor and the file interactivity factor.

78. (Currently Amended) The medium of claim 77 wherein the first function to
determine the first segment size is:

$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

where

Seg1 is the first segment size,

min is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the ~~video data file~~ said data
object,

V is a total size of the data object, and

f is determined by the formula:

12

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H + I$$

13

where

14

N_d is the number of computer-readable

15

storage devices available to retain the

16

segments of the data object,

17

M_i is the maximum digital data transfer

18

load,

19

C_i is the current digital data transfer

20

load,

21

H is the file usage factor, and

22

I is the file interactivity factor.

1 79. (Original) The medium of claim 76 wherein the second function is further
2 dependent upon the file usage factor and the file interactivity factor.

1 80. (Currently Amended) The medium of claim 79 wherein the second function
2 to determine the remaining segment sizes is:

3

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4

where

Segn is the a segment size for one segment of the
remaining segments,

max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the video data file said data
object,

V is a total size of the data object, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H + I$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the data object,

M_i is the maximum digital data transfer
load,

C_i is the current digital data transfer
load,

22

H is the file usage factor, and

23

I is the file interactivity factor.

1 81. (Original) The medium of claim 62 wherein the data object is a video data
2 file to be transferred isochronously to the second computing system.

1 82. (Currently Amended) A video data file distribution system in
2 communication with a plurality of computing systems ~~to provide for~~
3 transfer of at least one video data file of a plurality of video data files to at
4 least one of the plurality of computing systems, comprising:

5 a plurality of video data file retention devices in communication with
6 each other and with any of the plurality of computing systems; and

7 a segmentation apparatus in communication with the plurality of video
8 data file retention devices to ~~fragment~~ segment any of the video
9 data files into a plurality of segments to allow transfer to and
10 processing by at least one of the computing systems of said
11 segments, wherein the segmentation apparatus performs said
12 ~~fragmenting~~ segmenting by the steps of:

13 requesting a range of addresses within a storage device of the first
14 computing system containing said video data file,

15 determining a number of computer-readable storage devices
16 ~~attached to~~ in communication with said first computing system
17 available to retain a plurality of segments of said video data file,

18 determining a maximum digital data transfer load for the computer-
19 readable storage devices ~~attached to~~ in communication with
20 said first computing system,

21 assigning a minimum segment size which is the smallest amount of
22 digital data to be contained within one segment of the video
23 data file,

24 calculating a first segment size as a first function of a number of the
25 computer-readable storage devices, the current digital data
26 transfer load, the maximum digital data transfer load, and the
27 minimum segment size,

28 assigning a last segment size as the minimum segment size,

29 calculating all remaining segment sizes as a second function of the
30 number of the computer-readable storage devices, the current
31 digital data transfer load, the maximum digital data transfer load,
32 and the minimum segment size, and

33 partitioning said video data file into segments whereby the first
34 segment of the video data file is of the first segment size, the

35 last segment of the video data file is of the last segment size,
36 and all the remaining segments of the video data file is of the
37 remaining segment sizes.

1 83. (Cancelled)

1 84. (Currently Amended) The system of claim 82 wherein the segmentation
2 apparatus the further performs the segmenting of the video data file by the
3 steps of:

4 assigning one of the number of computer-readable storage devices to
5 retain each segment of the video data file; and

6 assigning an address within the computer-readable storage devices to
7 identify the location of an assigned segment.

1 85. (Currently Amended) The system of claim 82 wherein the first function to
2 determine the first segment size is:

3
$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the video data file,

V is a total size of the ~~data object~~ video data file, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right)$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the video data file,

M_i is the maximum digital data transfer
load, and

C_i is the current digital data transfer
load.

86. (Currently Amended) The system of claim 82 wherein the second function
to determine the remaining segment sizes is:

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

where

Segn is the a segment size for one segment of the
remaining segments,

max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the video data file,

V is a total size of the ~~data object~~ video data file, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_l}{M_l - C_l} \right)$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the video data file,

M_l is the maximum digital data transfer
load, and

C_l is the current digital data transfer
load.

1 87. (Currently Amended) The system of claim 82 wherein ~~the segmentation~~
2 ~~apparatus further performs~~ performing step of segmenting said data object
3 further comprises the step of:

4 determining a file interactivity factor describing a number of jumps by
5 the computing system within the video data file during processing
6 by at least one of said plurality of computing systems receiving said
7 data object.

1 88. (Original) The system of claim 87 wherein the first function is further
2 dependent upon the file interactivity factor.

1 89. (Currently Amended) The system of claim 88 wherein the first function to
2 determine the first segment size is:

3
$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of the video data file,

9 **V** is a total size of the ~~data object~~ video data file, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + I$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the video data file,

M_i is the maximum digital data transfer
load,

C_i is the current digital data transfer
load, and

I is the file interactivity factor.

90. (Original) The system of claim 87 wherein the second function is further
dependent upon the file interactivity factor.

91. (Currently Amended) The system of claim 90 wherein the second function
to determine the remaining segment sizes is:

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

where

Segn is the a segment size for one segment of the
remaining segments,

max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the video data file,

V is a total size of the ~~data-object~~ video data file, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_l}{M_l - C_l} \right) + I$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the video data file,

M_l is the maximum digital data transfer
load,

C_l is the current digital data transfer
load, and

I is the file interactivity factor.

1 92. (Currently Amended) The system of claim 82 wherein the segmentation
2 ~~apparatus further performs~~ performing step of segmenting said data object
3 further comprises the step of:

4 determining a file usage factor describing a number of requests for
5 said video data file for a period of time.

1 93. (Original) The system of claim 92 wherein the first function is further
2 dependent upon the file usage factor.

1 94. (Currently Amended) The system of claim 93 wherein the first function to
2 determine the first segment size is:

$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

7 **SegSize_{min}** is the minimum segment size allowed
8 during the fragmenting of the video data file,

9 **V** is a total size of the ~~data object~~ video data file, and

10 **f** is determined by the formula:

11

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H$$

12

where

13

N_d is the number of computer-readable

14

storage devices available to retain the

15

segments of the video data file,

16

M_i is the maximum digital data transfer

17

load,

18

C_i is the current digital data transfer

19

load, and

20

H is the file usage factor.

1 95. (Original) The system of claim 92 wherein the second function is further
2 dependent upon the file usage factor.

1 96. (Currently Amended) The system of claim 95 wherein the second function
2 to determine the remaining segment sizes is:

3

$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4

where

Segn is the a segment size for one segment of the
remaining segments,

max is the maximum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the video data file,

V is a total size of the ~~data object~~ video data file, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_l}{M_l - C_l} \right) + H$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the video data file,

M_l is the maximum digital data transfer
load,

C_l is the current digital data transfer
load, and

H is the file usage factor.

1 97. (Currently Amended) The system of claim 82 ~~further comprising wherein~~
2 performing step of segmenting said data object further comprises the
3 steps of:

4 determining a file usage factor describing a number of requests for
5 ~~said data object~~ video data file for a period of time; and

6 determining a file interactivity factor describing a number of jumps by
7 at least one of the plurality of computing systems within the ~~data~~
8 ~~object~~ video data file during processing by at least one of said
9 plurality of computing systems.

1 98. (Original) The system of claim 97 wherein the first function is further
2 dependent upon the file usage factor and the file interactivity factor.

1 99. (Currently Amended) The system of claim 98 wherein the first function to
2 determine the first segment size is:

3
$$\text{Seg1} = \min(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Seg1** is the first segment size,

6 **min** is the minimum function of two variables,

SegSize_{min} is the minimum segment size allowed
during the fragmenting of the video data file,

V is a total size of the ~~data object~~ video data file, and

f is determined by the formula:

$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H + I$$

where

N_d is the number of computer-readable
storage devices available to retain the
segments of the ~~data object~~ video data
file,

M_i is the maximum digital data transfer
load,

C_i is the current digital data transfer
load,

H is the file usage factor, and

I is the file interactivity factor.

1 100. (Original) The system of claim 97 wherein the second function is further
2 dependent upon the file usage factor and the file interactivity factor.

1 101. (Currently Amended) The system of claim 100 wherein the second
2 function to determine the remaining segment sizes is:

3
$$\text{Segn} = \max(\text{SegSize}_{\min}, V/f)$$

4 where

5 **Segn** is the a segment size for one segment of the
6 remaining segments,

7 **max** is the maximum function of two variables,

8 **SegSize_{min}** is the minimum segment size allowed
9 during the fragmenting of the video data file,

10 **V** is a total size of the ~~data object~~ video data file, and

11 **f** is determined by the formula:

12
$$f = N_d + \left(\frac{M_i}{M_i - C_i} \right) + H + I$$

13 where

14 N_d is the number of computer-readable
15 storage devices available to retain the
16 segments of the ~~data object~~ video data
17 file,

18 M_l is the maximum digital data transfer
19 load,

20 C_l is the current digital data transfer
21 load,

22 H is the file usage factor, and

23 I is the file interactivity factor.

1 102. (Original) The system of claim 82 wherein the video data file is transferred
2 isochronously to the computing system.